Name:

at1118paper: Complete the Square (v410)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 58x = -517$$

Add $\left(\frac{-58}{2}\right)^2$, which equals 841, to both sides of the equation.

$$x^2 - 58x + 841 = 324$$

Factor the left side.

$$(x - 29)^2 = 324$$

Undo the squaring. We need to consider both $\pm\sqrt{324}$.

$$x - 29 = -18 \quad \text{or} \quad x - 29 = 18$$
$$x = 11 \quad \text{or} \quad x = 47$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 + 40x = -399$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 + 50x = -609$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 - 20x \;=\; -84$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 + 46x \;=\; 560$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 - 40x \;=\; 624$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 - 24x \;=\; 1300$$